

of the *F. chiloensis* and 50 percent of the *F. vesca* populations had higher germination percentages on their native soils than others.

It is possible that little ecological differentiation was observed in our seed populations, because a critical selective factor was eliminated in the way we handled our soils. Parameters such as soil litter, temperature, soil surface microstructure, and allelochemicals are probably important and may have also affected the results.

We do know, however, that the lack of discrimination between the populations arose in spite of substantial variation in soil pH, salinity, and organic carbon content (Hancock and Bringhurst, op. cit.). After storage, the various soils had salinities ranging from 371–832 ppm, while pH varied from 5.11–7.20, and percent organic carbon values ranged from 0.13–5.97 percent. It seems likely, then, that the germination requirements of California populations of *Fragaria* are quite plastic for at least these parameters.

We thank several anonymous reviewers who insisted on making us see the truth.—JAMES F. HANCOCK, Department of Biology, University of South Carolina, Columbia 29208 and R. S. BRINGHURST, Department of Pomology, University of California, Davis 95616. (Accepted 28 Apr 1979.)

REVIEWS

A Primer of Ecological Principles: Book One. By RICHARD J. VOGL. 1978. xiii + 172 pp. Pyro Unlimited, Cypress, CA. \$4.95.

A casual perusal of the table of contents might lead one to decide that this is yet another addition to the recent proliferation of texts on ecological theory. From the title alone one might be tempted to place this book on the shelf alongside Wilson and Bossert's *A Primer of Population Biology*. Both title and table of contents are, in this sense, misleading. This is not a run-of-the-mill ecology text. It is an attempt to present basic ecological principles—and their management implications—in clear concise language and in an interesting, light-hearted fashion. It is to Vogl's credit that he emphasizes the role of this volume as a supplement to field experience, which he, along with most practicing ecologists, considers the backbone of our science.

In format the book alternates pages of briefly-described ecological principles with pages of more or less apt quotations from a wide range of sources. This is initially a refreshing approach. The book is replete with quotable quotes (e.g., "Many scientists use statistics the way that drunkards use lamp posts; that is, they use them more for support than for illumination.") and offers many insights that will elicit knowing chuckles from experienced ecologists. The book is punctuated by rather charming and sometimes whimsical drawings—often with a strong American Indian influence. It is, however, a treatment with a viewpoint, and as such may not be well received by those not already of Vogl's primarily preservationist persuasion. Unfortunately, the businessman, rancher, miner, developer, for whom this book, in part, is intended, may consider this a radical treatise rather than a source of solid ecological information.

The introductory chapter presents a balanced perspective on the field of ecology. In addition to the standard definition of ecology, Vogl presents several "alternate definitions" that should hit close to home for many readers. An example: Ecology is "The study that takes natural things that are easy to comprehend and translates them into languages . . . that few can understand." There is an emphasis on the holism of ecology, on the importance of synthesis, interpretation, and speculation to meaningful ecological research. There follows an exhaustive listing of the branches of ecology. That many of these categories overlap might be unclear to the beginning student. The introduction to this section is overly critical of those who specialize within ecology.

Perhaps the most illuminating statement in Chapter II (General Ecological Principles) is that "there are no absolute principles or universal ecological laws other than those

that govern the physical . . . and biological worlds When generalizations are made in ecology . . . there are always variations and usually exceptions." Although this chapter lists most principles found in more classic ecology texts, there is no suggestion of relative importance. Five pages are spent on Shelford's and Liebig's "laws", but the concepts of food and energy chains and Gause's principle are each relegated to one sentence. Attempts to simplify occasionally lead to inaccurate definitions (ecotypes, p. 46). Vogl presents an enlightened, balanced view of succession and of species diversity-stability concepts. Unfortunately, his discussion ends with the proclamation, "Natural diversity should be preserved and restored, and not destroyed and replaced with monotonous monocultures that invite unnatural catastrophes." Many of Vogl's non-ecologist readers are likely to close the book in disgust at this statement. Throughout the later chapters of the book, this occasional confusion of principles with opinions, unfortunately, persists.

Chapters II-VI contain principles relative to resource management, the role of man, and energy. Most of the principles presented are sound and basic. Environmentalists will find here a great deal of support for their views. Unfortunately, principles are not presented persuasively or supported adequately enough to convince a non-believer. These chapters would profit greatly by the inclusion of occasional examples—one example might be worth a thousand principles!

The final chapter, "Ecological Comments", contains a series of vignettes summarizing Vogl's views on many topics ranging from wilderness to chemicals to education. The thrust of this section is that the long-term survival of our civilization will require a basic alteration in the value systems by which many of us live. With this, I wholeheartedly agree! This chapter is thought-provoking and contains much excellent fuel for discussion.

The concept of a book designed to present ecological principles in a format that will make them accessible to people of a wide range of backgrounds and persuasions is laudable. Vogl's approach to ecology is refreshing and generally well-balanced. Unfortunately, the lack of hierarchal arrangement and organization left this reviewer, at some points in the book, with the feeling that she was working her way through something akin to a shopping list. Keeping principles to minimum statements helps simplify a subject best when principles themselves are kept to a minimum. Blank spaces and pages (ostensibly to facilitate marginal comments by the reader) make up approximately 20 percent of the book. The concepts presented might be better remembered if these spaces contained examples, which are notably lacking throughout. A book so rooted in natural resource management ought really to fill the pages with print and expect the reader to provide notepaper as needed!

This book should find its best use in high school and introductory ecology classes as a relatively painless means of introducing principles and generating discussion. Outside readings and laboratory and field experience would add much needed depth to the material presented. It will provide enjoyable recreational reading for practicing ecologists and excellent quotations for the frontispieces of doctoral dissertations. One can't help but wonder what is forthcoming in Book Two!—SUSAN G. CONARD, Department of Botany, University of California, Davis 95616.

Flora of Barro Colorado Island. By THOMAS B. CROAT. ix + 943 pp., 571 photographs + maps and graphs. Stanford University Press, Stanford, CA. 1978. ISBN 0-8047-0950-5. \$55.00.

When Gatun Lake, in the Panama Canal Zone, was created in 1911-14, through deliberate flooding by the builders of the Canal, a taller than usual group of hills, largely covered with remarkably natural semi-evergreen moist tropical forest, was cut off as Barro Colorado Island. The forest was set aside as a nature reserve in 1923 and, after